

October 1988

The National Locksmith®



Key Machines On Parade!

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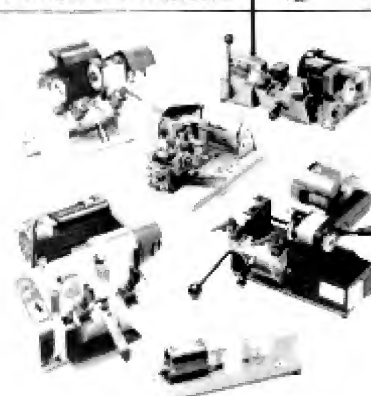
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*Click on the article
you wish to read*

The National Locksmith

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Key Machines On Parade!

On The Cover

Featured on this month's cover are key machines from the following manufacturers (clockwise from bottom): Scotsman Security Products; HPC, Inc.; Fulton Lock Co.; Locksmith Store; Ilco Unican; Framon Mfg. (center).

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Commentary

It's A Girl!

Your Editor doesn't often write about his personal life. I'm usually afraid to bore you with details. However, this time I can't restrain myself. On August 26, at 2:15 a.m. our daughter Samantha Mae Goldberg, was born. She came into this world with the umbilical cord wrapped tightly around her neck three times. Her coloring was something like grape jelly. But the doctor untangled her straight away and had her screaming indignantly in no time. I have never heard a more beautiful sound in my life.

These days the medical establishment doesn't give a woman much time to recover from childbirth. A little more than 48 hours after the baby, they released Colleen to go home. So, of course, I have been helping her as much as possible. I used to think that masterkeying was complicated. But that was before I tried to tackle diaper installation. Maybe I'll get it right before Samantha starts high school.

Here's another item I have been wanting to share with you. There are still some Technitips prizes unaccounted for. All you have to do for a chance at winning cash or a key machine is to send us your tip as quick as possible. There are still two months left in the year to qualify for this year's contest. Winning a key machine may be much easier than you think!

All you have to do is send us your trick or tip on how you do any interesting job. Send it to: Technitips, The National Locksmith, 698 Bonded Parkway, Streamwood, IL 60107. That's all there is to it. Who knows? We might just be sending YOU a key machine if your tip is selected as one of 1988's best tips. Plus every tip we publish wins a prize. So send in your tips right away and walk away with valuable prizes!

The 1988 presidential campaign will be coming to a vote very soon. So far, I don't think that this has been the most interesting race. Millions of people find it difficult to get really excited about either George Bush or Michael Dukakis. But before too long one of them will be elected President of the United States.

I think that locksmiths are great Americans. Most locksmiths I have met care a whole lot about this country. Therefore, I would like to hold a separate election right now just for locksmiths. (Don't you think this would be a better world if only they'd let *us* run things?)

Casting your vote for President is very easy. All you have to do is tear out the Rapid Reply card located at the rear of this issue. To vote for George Bush circle number 289 on the card. To vote for Michael Dukakis circle number 300 on the card. Then drop the card into the mail and we'll tabulate the results. It's quite possible that the results of the general election will be available before the results of our Locksmith Election. But it will be interesting to see who will receive the locksmith vote.

So fill out the card, and cast your vote. Even more important, though, is for you to go to the polls on election day and cast your *real* vote. That is if you are American. We do have many readers in other countries, such as our good friends in Canada, Australia, etc. To you locksmiths not from the U.S.—this may be your only chance to vote for President of the United States. We welcome your vote.



Marc Goldberg
Editor/Publisher

October 5

Letters

Comments, Suggestions and Criticisms

The National Locksmith is interested in your view. We do reserve the right to edit for clarity and lengths. Please address your comments, praise, or criticism to: Editor, The National Locksmith, 698 Bonded Parkway, Streamwood, IL 60107. All letters to the editor must be signed.

A Suggestion For Handling Customers

I have been reading articles on tips that would help me out in my trade. Here are some tips that I would like to share with fellow locksmiths.

I have been a locksmith since 1971 and an owner of a shop since 1980. In all this time, the biggest thing in my business is people. People are not all locksmiths even though some think they are. You know what I mean by that?

I have found if I take the time to explain to people what they need in terms that they can understand it helps me make that sale. Show them what the products that you want to sell them will do for them. Don't try to over-sell or to impress them with every number you know out of some catalog.

Treat them like laymen, not like a locksmith. It works in our shop.

Andrew Maglio
Illinois

Locksmith Recommends Charting Manipulations

I learned manipulation from Lockmasters and through some additional study and experience. I am mystified by articles and statements from safemen saying they do not need any charts. This may be true for some people, on some safes, but it cannot be true for all people.

I have had a few safes which I could not have opened without a few charts to review. With the charts I was able to figure out why a drop point moved two numbers—wheel shadowing. Once on a three wheel lock, I charted four numbers. The deepest drop happened to be the low spot in the wheel pack. It took extra time, some creative dialing, and some additional charting, but the safes were opened.

Some safes were not opened by manipulation as there were internal problems in the lock. The charting revealed this. I had a LaGard four bolt lock that would not read the same way twice, with identical dialing procedures. I finally drilled it opened. The last number of the combination was 10—forbidden zone. A past employee had set the combination.

On a different safe, after making a first chart and finding a drop point, I proceeded to make a test to find the exact center of the drop, but it had

moved six numbers. This happened twice, so I decided it had a slipping wheel. I drilled at the fence location, aligned the wheels and opened the safe. The wheel pack was packed with white grease (terrible). The combination had been changed by a locksmith six months earlier.

It is possible for an experienced safeman to open a properly functioning safe by manipulation without a chart. I have experimented doing it myself. On new locks, on new safes, it works fairly well. On a customers safe, there may be little problems that make big trouble—dirt under the dial, dried grease, rust, interruptions, and lock malfunctions, to name a few.

It is these things that make charting almost indispensable in the field. You will have the advantage of having the charts to study, in order to solve any problems, also, if you are interrupted or must leave for a period of time, you can always come back later and pick up the chart and continue from where you stopped. Although charting the manipulation process is time consuming, the extra time is worth it.

Some super-safemen boast of 15 minute openings. My opening times have never been so quick. It may be possible, but not probable. It takes me between 20 minutes to one hour to make a complete first chart; the time variance is because some locks are eas-



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ier to dial and read than others. I have gotten multiple numbers on first charts. Some manipulators stop on the first drop number, center it and proceed to wheel test it and continue from there. It may be a good short cut—try it, you may like it. I prefer a complete first chart.

My longest opening time was 8½ hours on a double door safe, top major round door. My shortest time was 25 minutes on a Meilink spring latch fire chest. After finding the first drop, I was running wheel test combinations when it opened. Luck and skill did it, I felt great.

After you get some practice at manipulating, you might stop using charts, or you may even make up some customized charts to fit your style of manipulation. I did, and I have not regretted it one bit. To get the experience, study and practice, but above all else be realistic.

Perry King
Texas

Editor's Note: You make a good point Perry. Most manipulators I have known recommend graphing your work. Charts can help with the current opening and can also be used for future

reference. Maybe chucking the graphs is showing off a little. Sort of like riding a bike with no hands. What do you think, readers?

'Points To Ponder' In Setting Labor Rates

Here are a few points to ponder when calculating your shop labor rate and material mark up percentage:

Business liability insurance; business auto insurance; health and medical insurance; workman's comp insurance; pension fund; vacation time/holidays; tools and equipment; percentage to reinvest in schooling to stay up-to-date; shipping charges; stock in trade; depreciation of tools and equipment; office expense/phone, lights, rent, etc.; taxes, Federal, state, sales and use; other hidden costs; and advertising.

William Borner
Pennsylvania

Trade Should Examine Itself Regarding Tool Sales

In the July 1988 issue of *The National Locksmith* under your *Commentary* section you printed an interesting article concerning a pick

gun which is evidently for sale to the public. Also there are numerous letters published under *Letters* that pertain to auto lockout tools also held by the public.

When will all this bickering stop? Sure I agree that these people should not have the tools to our trade. They are in fact *burglar tools* and should be treated as such, however, are *locksmiths* so blind that they cannot see the money that is involved? People make money selling these tools to whomever will buy them, right or wrong. They will continue to do so as long as the money is there for them. It is the same in advertising; there is money in it also.

Are people so blind that you cannot see that even your suppliers will sell to the public regardless of what they may say? After all, what does it take to be a locksmith besides buying the tools to the trade? Simple, a business card showing you're a locksmith is all that is needed. Anyone with \$30 can obtain these from any printer. It is also all that is needed to be bonded and subscribe to a trade magazine.

Please note that in the same issue of *The National Locksmith* there is an item for Steck Lockout Tool Kit on

Continued on page 74

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Technitips

Helpful Hints from Fellow Locksmiths



Send me your Technitips. Who knows, you may be our next winner! c/o The National Locksmith, 698 Bonded Parkway, Streamwood, IL 60107.

by Robert Sieveking

This month's Technitips are all examples of problem solving in action. Without the opportunity to learn through the experience of others, we must rise to meet each challenge through our own experiences, trial and error.

The more I talk and read from other locksmiths around the country, the more I see that the average locksmith relies on his past experiences, and methods developed over a few years or

a lifetime, to carry him along. That's like riding a horse looking out over his tail. The world, and locksmithing in general, is changing faster than most of us realize. Unless we continue to grow and take up new tools, learn new methods and stay abreast or ahead of the changes, the industry is going to leave the majority of those locksmiths behind.

I'm not trying to sell books or require every person that handles a pick, a Slim Jim or a pair of pinning tweezers take an examination or belong to a national organization to be granted the privilege to compete in the industry, but I am trying to get more locksmiths to devote more time to learning. If you're going to make a living at locksmithing, then get with the program. There are

enough jack-leg locksmiths around. What we need are more professionals.

Everybody worries over some Samaritan that opens an occasional car door, but only a small percentage of the "professionals" have studied the new car locks or actively gone after acquiring some of the new tools required to open some of the new model "domestic" autos. I had a customer the other day that needed a key made for a new Ford. He explained that he had been to other lock shops in the area and had not been able to find someone to make the key. The particular auto used a Mazda key. Who can tell me what new Ford uses a Mazda key?

If you are reading this article, you are one of those that is interested in the future of locksmithing, and aware of

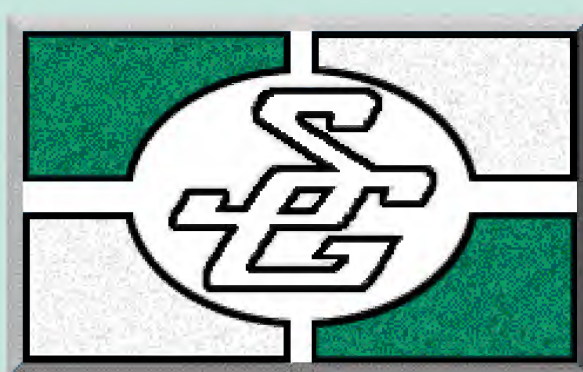


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the need to constantly keep growing and moving ahead, learning about what is new and reading about techniques that will keep you and your shop ahead of the competition. Don't tell the competition, but if they aren't moving ahead, they're falling behind. I stopped into one of the large shops in town the other day and, in conversation, asked if they had read my last article in The National Locksmith. They replied that their subscription had run out and they didn't get it anymore. I just thought, gee...what a shame. I guess they really didn't know the new Ford Festiva uses a Mazda key. Good thing only the smart locksmiths subscribe to The National Locksmith. I sure hope they don't buy

any of my books. There are some tricks in there that I don't want everybody to know.

Congratulations to all those that had their tips printed in this month's Technitips column. Some of the old pros are still holding out to get their tips in at the last moment. Don't hold out too long boys. The year is fast coming to a close, and some of the best awards are still there. I'm looking for a few good Technitips that clearly stand out above the rest. If you've got a tip that you think might win, write it on a napkin or the inside of a cigarette pack, but get it in the mail soon.

Keep reading. And send me a tip to win a key machine!

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October's Best Tip

This Technitip is for a jig to hold lock cylinders for shimming and most other jobs that require three hands. Weld a regular "C" clamp to a pair of vise-grip pliers as shown in illustration one. The tool is very



handy for holding padlocks to be picked, cylinders to be shimmed open, and parts to be welded. I have found this to be one of the handiest tools that I have in the shop or on the truck. Even on the job, if you have something to clamp to, you can use it as a small portable vise.

If you want to pad the jaws, to prevent damage to materials, use pieces of rubber hose over the jaws. Split the hose lengthwise, and slip it over the jaws of the vise-grip pliers. They will hold on, not slip, and can be removed easily. I hope this will help others that work on locks. Thank you.

Oliver Felt
Minnesota

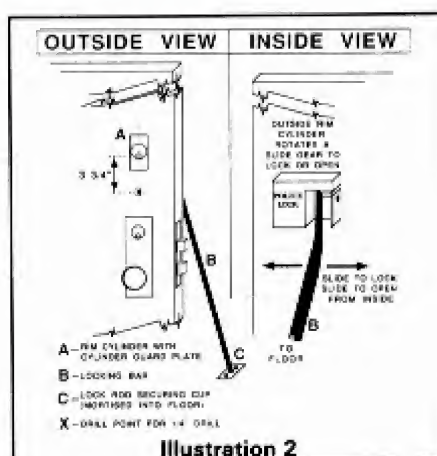
This Technitip concerns a bypass method for the police lock with the sliding floor bar, when a high security cylinder is used.

Having used this method more than once, I find that it is the fastest and by far the easiest method of opening a door equipped with the slide bar police lock and high security cylinder. This method does not destroy the lock or the cylinder, and the repair is quick and easy.

Measure 3/4" down from the center of the keyway and mark the drill point, parallel to the door jamb, as shown in illustration two (outside view). Drill straight through the door at the indicated point, using a 1/4" high speed drill.

With the bit fully through the door, move the drill motor left and right to widen the hole on the inside of the door in the shape of a horizontal funnel. Insert an 8" long thin blade screw driver through the door and fish slightly to make contact with the locking bar. Simply pull back on the door, as you slide the locking bar to the open position, as shown in illustration two (inside view). With the door now open, you can service or replace the high security cylinder.

To repair the damage to the door, simply insert a 4" carriage bolt through



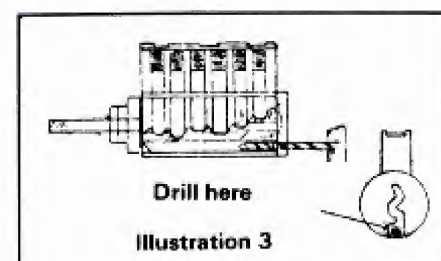
the hole, from the outside and secure it on the inside with a large 1/4" washer or fender washer and nut. Cut the bolt to length after tightening it in place. Hand file the bolt to remove any burrs or sharp edges to complete the job.

I'm in and out in short order, with very little sweat and the customer is pleased. Thank you for the opportunity to share this tip.

David DuBois
New York

This Technitip concerns a method of removing a broken key from a cylinder without damage to the cylinder. I've been using this method for many years, and it hasn't failed me yet. It is a very simple and easy way of removing a broken key from a pin tumbler cylinder when other methods fail.

If the key is broken off flush with the face of the cylinder, and you're not able to disassemble the lock, drill a small hole in the key, no larger than the bottom portion of the keyway. (See illustration 3.) Drill into the key only,



approximately 1/4". Remove the drill bit. (In some cases, the key may come out as the drill is removed.) Now use your favorite key extractor to pull the broken portion of the key. This method will allow you to use the broken piece to duplicate a new key, if another key is not available.

I've used this method on many brands of pin tumbler cylinders, and even small file cabinet locks.

Mark Kovach
Indiana

Editor's Note: There should be no apparent damage to the cylinder when the job is completed, so be careful in selecting the drill size and in drilling the key. If the drill is too small, it will bind and break in the lock. If the drill is too large, it will damage the lock plug and shell. A high speed die grinder or Dremmel tool might be a good tool to use with this tip.

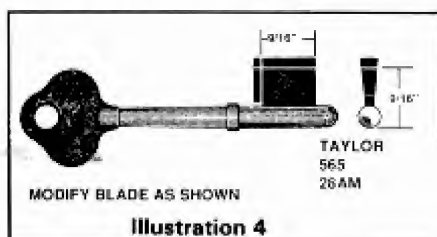
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This tip is an easy method of opening the dreaded 175-70 Diebold safe deposit box lock without having to pull the door.

Most of us know that many of these locks are mounted on hollow doors, which are damaged too easily when the door is pulled. This clean opening method requires the removal of the lower portion of the renters' levers. With a bit key modified as shown in illustration four, the gateless levers can be raised above the fence and the bolt moved back after the guard is set.

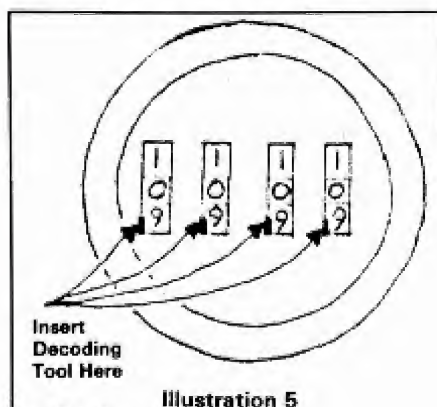


The method is as follows, for a right hand door. Pull the renters' nose. Using a 3/8" hole saw *without the pilot drill* (do not use a regular bit), remove the left bottom of the levers which are showing. Insert the prepared bit key into the renters' hole with the bit facing the guard side of the lock. Turn the key clockwise to lift all the levers above the fence. With a pointed probe, slide the lock bolt to the right to open the door. Reverse directions for a left hand door.

Marty Arnold
New Jersey

About twice a week, someone comes into the shop and presents me with a locked "Guard" or "Prestolock" combination padlock and asks for the combination. After some experimenting, I am now able to decode these locks as easily as decoding the older "Sesame" combination locks. I use the ESP decoding tool (#SD-7).

Lay the Presto or Guard lock flat in front of you, and insert the long curved



end of the tool into the lower left side of the rectangular hole, as shown in illustration five. Insert the tool with the curved tip toward the left. Keeping gentle pressure toward you on the tool, turn the number wheel from zero to nine slowly, one number at a time. At some point the tool will fall toward you about an inch. Turn the wheel until the tool again stands straight up. The number you are on is your first "base number." Repeat this process to find a base number for each wheel. Add "2" to each number to find the combination to the lock. See example :

4 2 9 3 These are the base numbers
+2 2 2 2 Add 2 to each base number
6 4 1 5

Your padlock should now be open, and you change the combination.

Charles Bond
California

This Technitip concerns the new Ford Taurus trunk lock body and cylinder. I've had several customers come in to say their trunk key turns but

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does not open the trunk. My first thought was that the tailpiece had come off, as with the majority of trunk lockouts. Upon inspecting the lock, I found that the holding clip for the lock is located in the open, above and between the licence plate lights. You will see the rivet holding the clip in place. By using a small sharp cold chisel, the head of the rivet can be easily removed and the lock retaining clip pried down to allow the lock cylinder to be removed. The lock is further held in place by a friction ring inside the trunk, but this will slide off as the lock is pulled from the trunk lid.

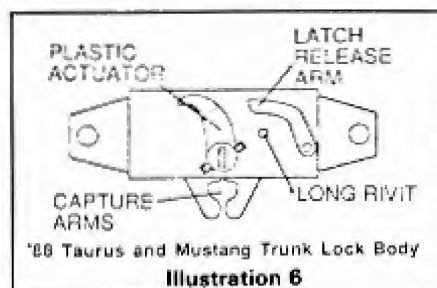
If the cylinder is damaged, you can repair or replace it with a new one. The cylinder is unique to the Taurus, so you will need a direct replacement lock. The Ford part Number is E8DZ5443507.

In this case, the cylinder was fine, but the problem was in the latch mechanism. The actuator from the lock cylinder passes through a plastic actuator arm which releases the trunk lock capture mechanism. The tip of the plastic arm had broken, and would no longer operate the latch release arm. When the cylinder is turned, the arm turns too far and becomes jammed

under the latch release arm, without tripping the release.

The plastic lever arm comes out easily after the lock body is removed from the trunk, but the trunk must first be opened.

The trunk latch was released by using a long thin screwdriver through the plastic actuator. To prevent the lock from jamming, a long rivet was installed as shown in illustration six to limit the motion of the actuator. The plastic actuator must be ordered from Ford.



The '88 Ford Mustang uses the same trunk lock mechanism and has the same problem. Another symptom of this problem is that the customer has the key in the lock, turned, and is unable to remove the key. Remove the lock the same as above and free the

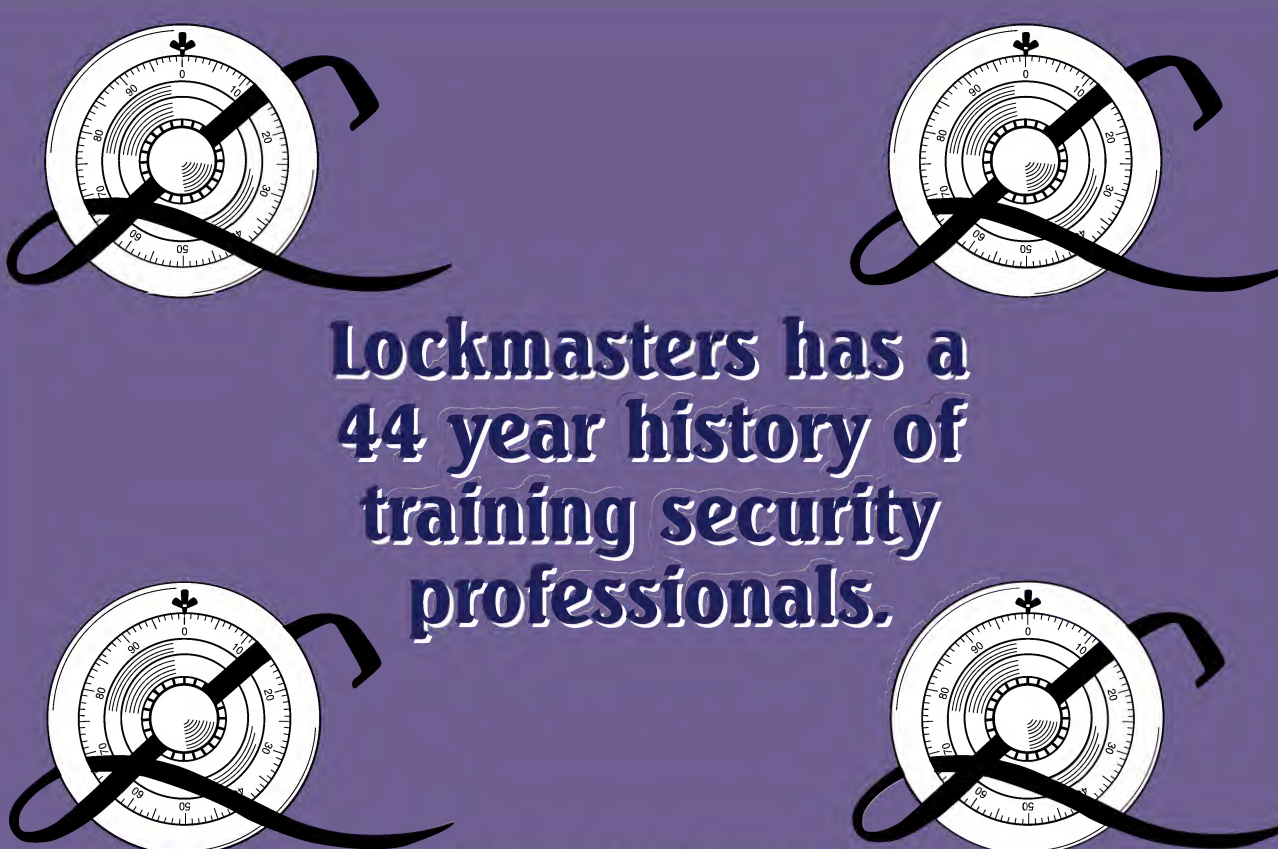
actuator using a screwdriver. Install the rivet to prevent the problem from occurring again.

Frank Markisello
New York

This tip concerns the use of the small DC fans and fan motors found on some of the late model foreign and domestic autos. I have had great success, using these motors in my truck. My service van is not equipped with air conditioning, and on warm days a fan can be a welcome relief from the heat. One inexpensive source for a good quality fan is the junk yard. The radiator fans found on some of the foreign autos are perfectly suited to the purpose. Some of these fans are even equipped with a blade guard to prevent possible injury from the fan blade. A mounting bracket and in most cases an in-line fuse holder will come with the fan. Simply mount the fan and wire it into the 12V DC of the truck.

The DC motors are fairly powerful little motors, and will also give good service as power for key machine. Just be sure to use large enough wire to

Continued on page 74



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Newsmakers

New Products and Industry News

Kwikset Expands Line With Dualset Combination

A new combination of entrance lockset and security deadlock is being introduced by Kwikset Corporation. Called Dualset, the new product combines Series 870 deadlock with a choice of Bel Air or Copa knob designs. Both products are packaged together, yet cost less than if purchased separately. Dualset is similar in concept to Kwikset's Security II (with Series 880 deadlock) and Doorset II (Series 660).

Dualset is available in a choice of finishes, and with single or double-keyed cylinder deadlocks. Both locks are keyed-alike, with four keys provided. Dualset comes standard with Kwikset's adjustable deadlatch and



adjustable deadbolt to fit backsets from 2 1/4" to 2 3/4"

Sentry Unveils Quality Line™ Safes

In an effort to give locksmiths a competitive selling edge over mass merchandisers, Sentry Group has introduced the Professional Quality Line of fire safes, chests, and files.

The new Sentry® Professional Quality Fire Safe line replaces the Sentry Supreme brand name and offers the locksmith customer additional benefits. The Professional Quality Line is available in a new gray dove color and comes with bolt-down hardware. The Sentry warranty has been extended from 3 years to 5 years and the after fire replacement guarantee has been extended from 10 years to lifetime.



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Master's Padlock Covers Weather The Elements

"Weather Guard" covers from Master Lock help protect padlocks on sheds, storage areas, gates, trucks and other outdoor property against clogging and jamming due to dirt, dust and road spray.

Made of durable ethylene-propylene rubber, Weather Guard covers are available in sizes to fit many Master padlocks. Covers also resist oil, chemicals and temperature extremes.



Stanley Offers Pocket Frame Hardware Set

Stanley Hardware now offers a 250 pound Pocket Frame Hardware Set for easy installation of pocket doors in commercial office buildings, large halls and restaurants.

Stanley's Model 2826 Pocket Frame has been upgraded with a 67 percent weight increase, from 150 to 250 pounds, to accommodate diverse commercial uses. The heavy-duty hardware is designed for non-stationary space dividers, large panels and multiple doors.

The universal pocket frame set is factory sized to fit doors 3' wide and 6'8" high. Doors can be resized for width openings of 2' to 3' and less than 6'8".

Other features include: increased vertical adjustability of 1", and a two piece hanger with four large 1 1/4" diameter lubricated thermoplastic wheels on ball bearing shafts. The adjustability of doors after hanging eliminates use of separate lock nuts.

Pro Plugger Safe Repair Kit

Professionally repair exterior drilled holes in record safes and cabinets with the Pro Plugger kit.

A tapered threaded plug, produces a cold weld type repair. The repair is completed in five minutes, and is invisible. The fire classification of the safe is maintained. The new Pro Plugger Kit can be purchased complete with 20 plugs, and all necessary tools to install them, or as a refill kit, with 10 plugs and special tap.



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Craftmaster Hardware— A Family Run Wholesaler

Craftmaster Hardware Co., Inc. of Hackensack, NJ dates back to 1952 when Jules Austin began to make and sell flat steel key blanks, door closer springs and locksmith supplies. Today the company continues under the direction of Austin's grandson Michael Spingeld.



The company carries all the major lines of locksmith supplies and still specializes in a vast array of keyblanks including many hard-to-find numbers.

The Craftmaster catalog is available for \$7 which is refundable with a purchase from the wholesaler. The mail order department serves a customer base which is nationwide in scope.

In 1987 the company moved from lower Manhattan to Hackensack, New Jersey. The new location permitted Craftmaster to stock even more items than they had before.

Circle 217 on Rapid Reply

Dorma Introduces Safety Line Brochure

Dorma Door Controls Inc. has introduced four new life/safety door closers with electromagnetic hold open and release devices to its line of controls for fire and smoke barrier doors.

The Dorma DC 140 and DC 130 North American series offer economical, aesthetically coordinated soft line door controls.

The Dorma TS 83 EMF and TS 83 EMR European-designed series are narrow projection architectural alternatives to the Dorma DC series profile.

The fire/life safety series of Dorma door controls feature electromagneti-

cally controlled frame-mounted track hold open door closers with single point adjustable hold open, in push or pull side mounts, and utilize either the TS 83 or DC 6600 adjustable closers.

When used in conjunction with a central control system, the TS 83 EMF and DC 130 act as a hold device, which will automatically close doors when in an alarm state or power outage.



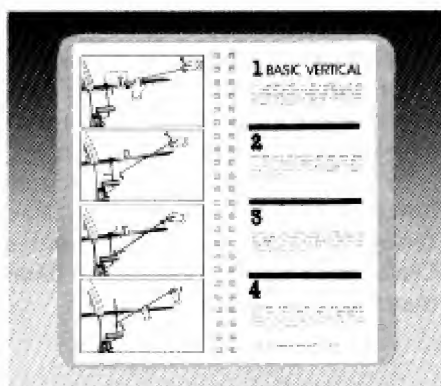
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Slide Lock's Z-Tool™ Unlocks 1950-Present

Z-Tool is the new, all-in-one tool from the Slide Lock Tool Co. It includes its own specially designed window wedge as well as a 90 page manual that indexes over 600 models, anti-theft guarded or not.

Clearly worded and illustrated in 4-step format, the Z-Tool manual covers all autos, trucks, and vans, both foreign and domestic.



Ilco Urges Trade-In Of Key Machines

Old key machines are now worth money to you under the Trade-In Program recently announced by Ilco Unican Corp. Under this program, any locksmith who buys an Ilco Orion machine immediately qualifies for a \$100 trade in offer. Any key machine can be turned in, regardless of make, model or condition, as long as it is motorized. Hand operated machines do not qualify for the trade-in.

The new Ilco Orion machine is shipped with forms authorizing the return of the trade-in machine, which goes to the wholesaler, who sends the machine to Ilco Unican. Upon receipt of the trade-in machine and the processing, Ilco Unican will send the purchaser a \$50 rebate check plus \$50 (dealer cost) in free key blanks. The key blanks will be numbers appropriate for the machine purchased.

The program applies to twelve key machines under the Ilco Orion brand name, such as a flat key duplicator, a lever operated cylinder duplicator, an automatic cylinder duplicator, an angle key duplicator, a dimple key machine, plus other special models. It is valid until December 31, 1988. Contact your wholesaler or Ilco Unican for details.

High Tech Releases New Locksmith Catalog

High Tech Tools, has recently released a new locksmith tool catalog. The catalog is a collection of tools especially chosen for master locksmiths, from traditional products such as pick sets, key cutters, drill accessories, pin punches and screwdriver sets to specialty items like the MDS Probe Lights and the Mitutoyo electronic digital caliper.

The list of products they have assembled is extensive and they stand behind their products with a 30 day money back guarantee. Catalogs can be obtained at no charge.

A new feature in this catalog is a locksmith printing section. Because they own and operate their own commercial printing facility, they can offer a selection of high quality specialty forms such as locksmith invoices, purchase order forms, statements and work authorization sheets, all of which are printed with the locksmith's company name, address, and phone number.



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The HPC/Silca Club

"We cut our first key within 30 minutes after the machine was taken out of the box and the key worked perfectly. This was done by someone who had never seen the machine before."



Send your lock and key questions to Jack Roberts, *The National Locksmith*, 698 Bonded Parkway, Streamwood, IL 60107.

by Jack Roberts

Last year, when the new BMW "L" series cars appeared in our area with the Huf "High Security" locks, it became apparent that if we were to continue to service our BMW customers, (dealers and owners) we would have to acquire a key machine with the capability of cutting the sidewinder type of keys.

In the technical article, "Servicing the new BMW," which appeared in the January 1988 issue of *The National Locksmith*, we outlined the procedures for disassembly and recombining of these locks and the use of "The Ten" machine for duplication of the keys. During the last few months we have conducted a rather intensive search and investigation of the various machines available which have milling capabilities and utilized several hours at the Las Vegas ALOA convention in hands on use of the machines which were on display.

Any purchase that we are considering is analyzed with two important

questions, "Is there a market?" and "Can we tap that market?" Our answer to both of these was a definite "yes" and our main decision was which machine would best meet our requirements. These included price, size, user friendliness, durability, technical service support, and total cutting capabilities.

From our search and investigation we decided that the HPC/Silca Club would best meet all of our needs for the present and for some time in the future. The list price is certainly in line with any other machines in today's market and HPC has made this an easy-to-own machine with their lease-purchase plan. It is a 36 month lease and \$1 buy

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out at the end of the lease.

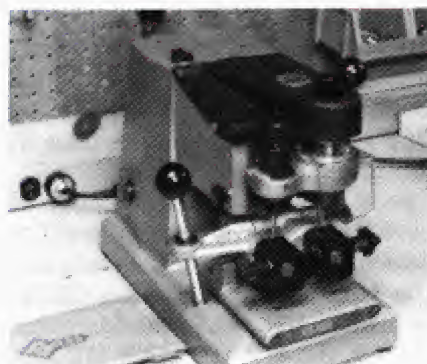
We have two cutting benches, a stand up bench and a sit down bench. The neat and compact size of the Club, 10½" wide, 11½" high, and 14½" deep, allows it to fit nicely on our "sit down" with plenty of room to work. (See photograph 1.) At 32 pounds the machine is easily transportable and can be conveniently taken to a job site.

User Friendliness: We cut our first key, a BMW double sidewinder, within 30 minutes after the machine was taken out of the box and the key worked perfectly. This was done by a person who had never seen the machine, was not familiar with vertical milling, and who had to read and study the operating instructions before starting:

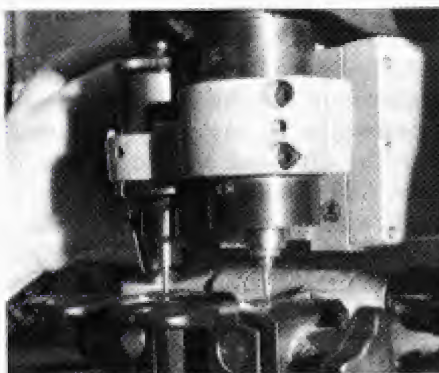
The Club arrives fully tested and calibrated for accuracy so that the only operator adjustments are those required for setting the depth of the cut. This is a very simple procedure which is a must in our shop. This adjustment will be described fully, later in this article.

Key cutting is simplicity at its best; if you can trace, you can cut a key. (See photograph 2.)

Durability: From all outward



1. The compact design of the HPC Club machine.



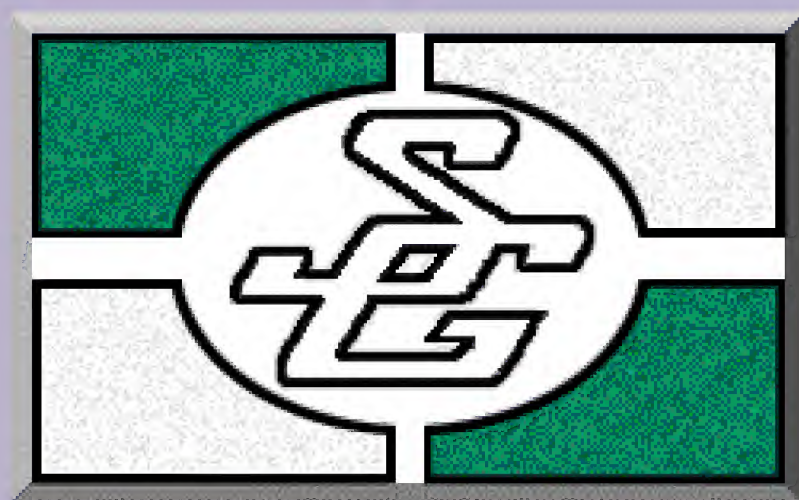
2. Key cutting with the Club machine.

appearances the Club looks as though it is built for long life with little maintenance. The motor is a high speed collector type, single phase, operating on 110V 60Hz or 220V 50Hz and is completely enclosed within the body of the machine. The drive belt (see photograph 3) appears to be cloth covered, and is the only part of the machine that we felt could be improved. Maybe it will run forever but it just doesn't look the part in such a well engineered and constructed unit.

We called in a machine shop owner, who has milling machines costing into six figures, for his opinion of the construction of the Club. To say that he was impressed is to put it mildly. This gentleman was overwhelmed by the

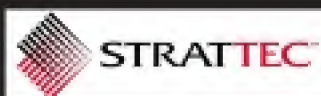


3. Belt drive assembly.



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quality of engineering and manufacture that has gone into the Club. He is, in fact, considering the purchase of one of these for use in his own operation.

Technical Service Support: We have been buying key machines for a long time and have spent many dollars on phone calls trying to get information on some aspect of operation and/or maintenance. It is our considered opinion that the HPC Key Machine Service Center has been designed to be the best in the industry. Many times when we are calling across country, and paying the bill, we get rather upset when put on hold while waiting for the proper person to speak with in regards to a particular problem. We calculate the increase in the value of AT&T stock while we are holding.

The HPC Service Center 800 number certainly puts one at ease. The holds are usually of short duration and if it appears that there will be a long wait you are so advised with the information that a technician will return the call in a few minutes. And they do it! Frankly, I am impressed with the product support by HPC.

Total Cutting Capabilities: As mentioned earlier our first consideration

for a machine such as the Club was for the duplication of the BMW 4 track sidewinder. Anything beyond that could be counted as a bonus and the Club gives us more bonuses than we had imagined.

Believe, if you will, duplication of these High Security keys on just one piece of equipment: The Lancia and Alfa Romeo, using HPC/Silca GT 2P; the BMW, HU 58AP; the Mercedes, HU 55P, HU 41P, HU 44AP, HU 39P, HU 40P; the Saab, YM 30P; the Volvo, HU 56RP, the Opel and Aston Martin, HU 43P and YM 27P. Even the short lived BMW dimple keys using PB 1P and others of that type such as the Dom, DM 22; Kaba, KA 1, KA 2, and KA 5; and Keso, KE 3, and KE 4. Kaba KA 5 and Keso KE 1, KE 4 keys require angle cuts, (i.e. Kaba 15 degrees, Keso, 5 degrees) which are easily performed with the Club and will be explained later. Optional accessories allow the duplication of other types of keys such as the Lips, Sea and Giobert but at this point in time the Club will *not* cut Tubular, Fichet, or the Porsche HU 42P/45P.

With some imagination and dexterity there are many possibilities with the

Club. The second day that it was on our bench a customer came in with a BMW motorcycle key. Maybe you have seen one but there sure aren't many of them around—they are little jobs with a round black plastic head. I think this may have been the second one of these I had ever seen and we have never carried the blanks, Ilco N2M or HPC/Silca NE 5. A little milling with the Club using a Taylor D80D produced an operating key in just a few minutes, and at a nice price. None of us like to turn a customer away because we can't perform the service they request.

Now let's get into the operation and cut some keys. The standard accessories that are shipped with the Club include a set of hex wrenches (6), an open end wrench, a set of tip stops for those keys that cannot be shouldered, an adaptor for certain Mercedes keys, (HU 41P/44AP/55P) and a set of adaptors for making edge cuts. (See photograph 4.)

Also included is a set of testing pins for tracer and cutter calibration, three sets of tracer-cutters and a neat little holder for all of them. (See photograph 5.) The tracer-cutters T 20 and F 20 are

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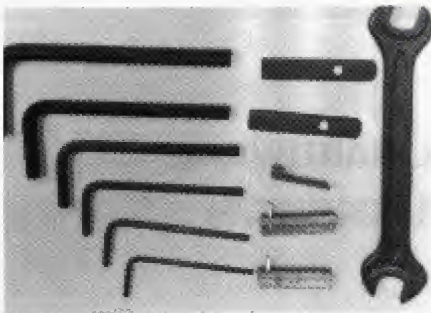
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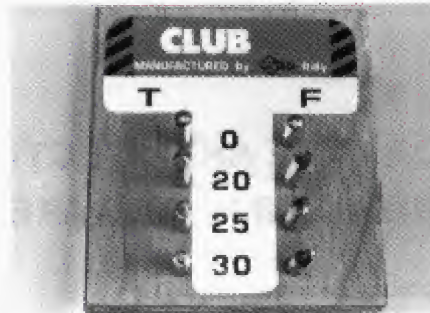
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4. Set of hex wrenches included with the Club.

universal tools used for dimple cuts, T 25 and F 25 are for angled cuts, T 30 and F 30 are universal tools for lateral cuts. (See photograph 6.)

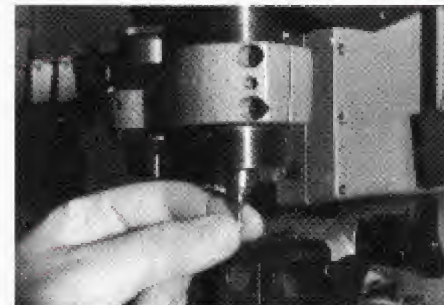
Each time that the tracer-cutter combo is changed, the depth of the cut must be reset. This is a very simple and



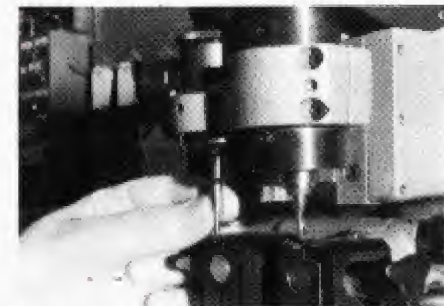
5. A testing pin set with a handy holder. easy operation and is a breeze compared to setting the guide and cutter on a standard duplicator. The cutter is placed in the chuck on the right side, (see photograph 7) and tightened into place. The tracer is placed in the left chuck with the tip of the tracer just a smidgen lower than the tip of the cut-



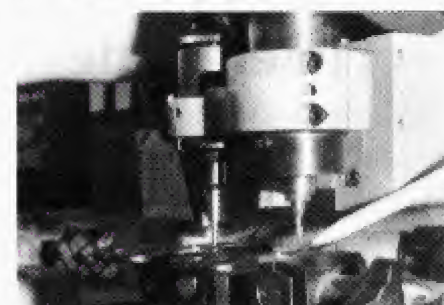
6. Tracer cutters for dimple, angle and lateral cuts.



7. The cutter being placed into the chuck.



8. The tracer inserted in the left chuck.



9. Vertical head lowered into position to begin cutting.

ter. The tracer set screw is tightened just enough to hold the tracer in place and still allow it to slide up into the chuck. (See photograph 8.)

Two identical key blanks are then placed securely in the clamps (i.e., jaws or vices), and the vertical head is lowered with its control handle until the tracer touches the blank in the left clamp with the cutter slightly above the blank to be cut. (See photograph 9.) Slight downward pressure on the handle will bring the cutter to the surface of the blank in the right clamp and at the same time the tracer is forced up into its chuck. The tracer set screw is then

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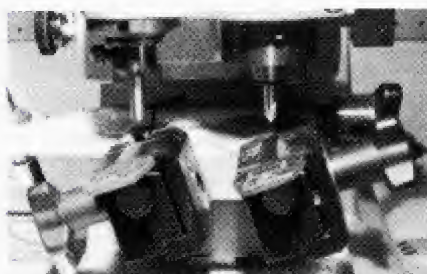
tightened securely and the Club is ready to start making money.

The key to be duplicated is placed in the left clamp, shouldered against the front of the clamp, and tightened securely. The blank is placed in the right clamp in the same manner. Cutting begins by lowering the cutter with the handle on the right side and tracing with the handle on the left side. It's really that easy although the cross movement control of the lateral control handle takes a bit of getting used to because of the free movement allowed by the ball and socket joints. After cutting a couple of keys one gets the feel of the controls and it's smooth cutting from there.

The clamps (jaws, vices) are two way and can be rotated 180 degrees for firmly gripping various key designs. An additional feature of the clamps is that they can be set to any angle up to 45 degrees, left or right of center, for duplication of those keys that require angle cuts as mentioned earlier. Just loosen the locking knob on the right side and set the angle desired on the indicator located at the rear of the tracer clamp. The clamps are linked together so that any movement is synchronized and they are both set at the

same time. (See photograph 10.)

The only maintenance required for the Club is lubrication of the cross bearing shaft and a few drops of oil in the dovetail vertical slide oil cup every eight hours of use. (See photograph 11.) We have found the Club to be an



10. All movement of the clamps is synchronized.



11. Arrow indicates the slide oil cup where oil should be added.

extremely reliable, well built, easy-to-use and easy to own machine that has broadened our marketing capabilities by a significant factor. With the use of Lynn Hawkins High Security Auto Key Guide Sets and the HPC Soft Key-

track key blank cross reference program, which lists 367 Foreign Automotive/Motorcycle Key Blanks, (18 of which are High Security), we feel that our customer needs can be met quickly and profitably for some time in the future. The *add* feature of Keytrack gives us the ability to list new key blanks as they become available so that we have quick reference at all times.

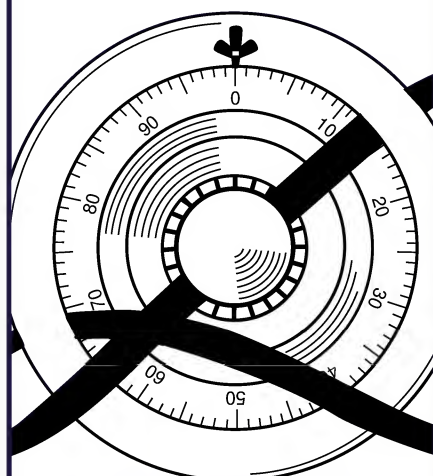
Our cutting benches seem to get more crowded each year, but we sure did make room for the Club and are really "keyed up" about it. (See photograph 12.) Any extra profits that we realize, however, will go for boat payments rather than for an exotic automobile.



12. Jack Robert's favorite liability.

Editor's Note: The clear plastic safety shield, which, by law, must be in place when the Club is in operation, has been removed for clarity in these photographs. ■

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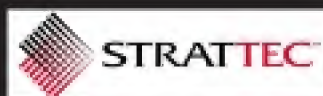
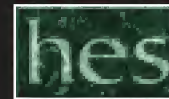
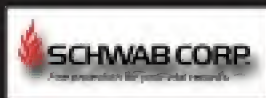


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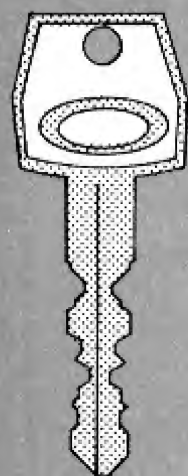


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by machine



Key

Machines

On Parade!

In this section you will find a number of products by various key machine manufacturers. Virtually every locksmith owns one or more key machines since key cutting is probably your best known service. A key machine is a piece of equipment you will live with for a long time, using it thousands and thousands of times over the years. Choose well and you will be purchasing an item that will pay for itself many times.

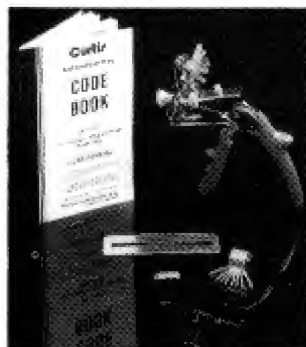
In this product review section we have tried to bring together a representative sampling of the key machines that are offered to the

trade. Of course, it is impossible to have every manufacturer represented here. But we have tried to assemble a good sampling of material for you to examine.

If you feel you need more information about any of the items presented here, please use the Rapid Reply card to request literature. You will find the Rapid Reply card toward the back of the issue. Like cars, there are styles of key machines to suit everyone's taste. Be sure to give the matter plenty of thought. **MG**

Curtis No. 15 Code Cutter

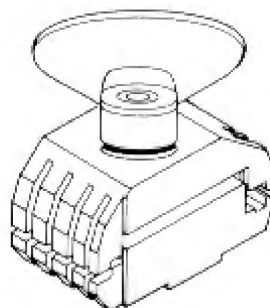
Curtis' No. 15 Code Cutter cuts original vehicle keys by code. Recently, a number of import car manufacturers have adopted a new 8-cut key for 1988 models and beyond. Curtis has introduced code programs using a 47° code cutter, which can cut the new keys. Recent programs have included makes and models such as Daihatsu, Honda Civic, Isuzu, Mitsubishi, Eagle Premier, Geo Tracker and Metro, and more.



DiMark's Borkey Model 986

Reversible jaws are the newest option on the Borkey Model 986 Compact Pro key duplicating machine. This semi-automatic is suited for vans because of its compact size. With the turning jaws, keys can be securely gripped by a center milling and (as with the standard Rexa jaws) they can be bottom-gauged, tip gauged, or top-shoulder gauged.

The model 986 comes equipped with either the standard or turning jaws.



ESP Offers Model 990

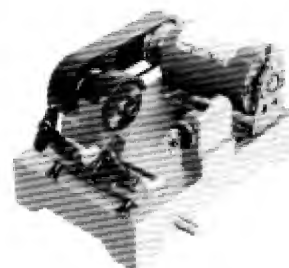
The ESP Corporation manufactures the Model 990 Manual key machine. The 990 features double-sided reversible jaws that eliminate the need for adapters, 34MC high-speed cutter, bronze gauge fork and nylon brush. The carriage is fixed to the sliding carriage shaft resulting in reduced play, less wear on the shaft and bearings, and more accurate key duplications.

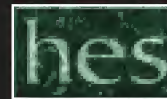


Framon DBM-1 Key Duplicator

The Framon DBM-1 is designed to cut deposit box, locker and padlock keys. This specialized flat key duplicator will cut blanks up to 2½" long. It has a rotating guide for up to 6 different cutter widths. Depth adjustments can be made that accommodate in increments of .001 inches.

The DBM-1 is a small (8½" x 12½" x 7½") simple duplicator designed to do one job and do it well.





Fulton Offers Free Flo

The Free Flo is designed to cut Medeco® and Emhart® keys. It will also cut regular cylinder keys.

The Free Flo features a permanent position for angle cuts (L, R, C), and is constructed in European high technology. The jaws hold any type of key firmly and hold any type of key head.

The machine has a .25 HP motor, is self-cooling, pre-capacitated with ball bearing construction and never needs lubricating. The unit weighs 54 pounds.



The HPC/Silca Bravo Master

HPC is proud to introduce a 2-speed, semi-automatic key machine, the Bravo Master.

This key machine has all the features every professional locksmith demands. The new 2-speed motor allows you to cut virtually any type of key—brass as well as steel. The unique 4-way vise jaws can securely hold almost any key. The carriage floats on a single shaft, over 3/4" in diameter with sealed bearings for quick and easy operation.



Ilco Markets Orion KD55

Dimple keys, 2-track and 4-track sidewinder type keys, and even angled dimple keys, can be cut on the KD55 Multi-Drill machine now being marketed by Ilco Unican. Keys of this style are appearing on the high priced import cars, and high security installations.

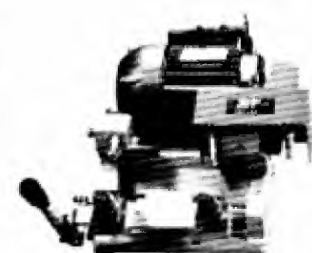
The KD55 operates like a drill press, using a variety of cutters and depth guides to produce dimple cuts, tracks or grooves, as required by the original key. Changing each cutter and depth guide is easily accomplished.



Jet Hardware's Pro Jr.

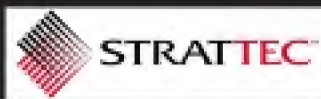
Jet Hardware's 1/4 H.P. key machine comes complete with a two year warranty.

The Pro Jr. features: extra heavy duty casting; accurate, strong, reversible gripping vise jaws; long indexable handles; 3" diameter cutter and a heavy duty wire brush. The unit also allows easy line-up of keys.



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Keymak Debuts The KeyMaster

The Keymak company has announced the release of an entirely new machine: The KeyMaster.

KeyMaster features an innovative depth indexing and punch carrier system that permits the cutting of several key types from one machine base.

A code wheel and rotary ball bearing mechanism, replaces the old sliding bar depth index design. Clicking the code wheel to the appropriate index number allows a locksmith to cut keys fast, easy and maintain tight specifications on all key cuts.



Locksmith Store's Sabertooth™

The Sabertooth™ Key Duplicator is a newly designed key cutter developed by The Locksmith Store.

The Sabertooth features a new 3" plus billet of carbide, weighing more than 2/3 pounds, and powered by a 1/3 h.p. motor. To insure "zero" power loss, cog pulleys and a toothed drive belt were adopted.

Parallel action vises were added for key clamping and material stability. Simplified gauging of keys with and without shoulders dictated a full function shoulder/tip gauge with extended travel.

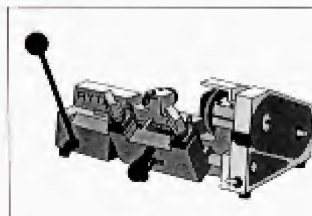


Semi-Automatic Rytan RY100

The model RY100 is an American-made semi-automatic key machine designed for shop or van use from Rytan, Inc.

Features of this machine include: High speed stick-shift design, large HSS cutter, ball bearing cutter shaft, and powerful A.C. motor that works on Redi-line with D.C. motor available.

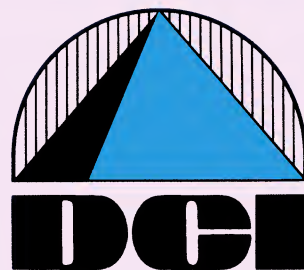
It also has built-in full function key gauges, built-in cutter shaft lock, wide spaced vises accommodate large keys, reversible quick change top vises, and much more.



Scotsman Upgrades Cutting Capabilities

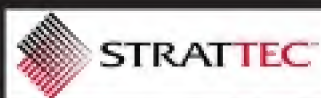
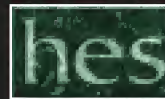
Locksmiths can upgrade their tubular key cutting capabilities with the Scotsman 747XU key machine. The 747XU will duplicate, decode and cut-to-code all three size tubular keys. It makes all necessary cuts for 7, 8, 9, 10 and 11 pin locks, having center, left or right cuts, as well as dead pin cuts and cuts within cuts.

The "Segal Modification," a standard feature on the 747XU releases the machine's inner control, allowing for keys to be cut in any radial position at any depth.



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DiMark's Rexa Flat Cutters

DiMark International is offering a brand new option for Borkey Rexa machines. The package of flat cutters and guides can be tailored for individual requirements or purchased complete.

The package can be used on all Rexa machines, regardless of age. No adjustments are necessary for spacing and depth when converting back and forth from cylinder to flat keys.

660 Automatic From ESP

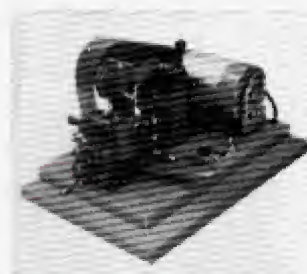
The Model 660 Automatic key machine manufactured by ESP Corporation has the same features as the Model 990 Manual including a heavy-duty 1/4 hp motor, serrated vise-jaws and steel-insert turning knobs. A simple flip of a switch cuts keys automatically. Manual cutting can still be done by conventional methods.



Framon Offers The No. 2 Machine

The Framon No. 2 machine produces keys with original factory depths from .115" to .400" and accommodates keys with as many as seven spaces with increments up to .164" apart.

Features of the No. 2 include a center to center cut tolerance, from bow to tip, that does not vary more than one thousandth of an inch between cuts. Also, the spacing block provides a total of 43 different spacing alignments including Medeco and Emhart.



The Flat Cut From Fulton Lock

The Flat Cut handles flat steel keys and safe deposit box keys.

The dimple cut will cut new type Mercedes, Dom, Kaba, Keso, Fichet, and virtually all exotic high security keys.

A full selection of parts for all machines is in stock. Plus all machines are now available for immediate shipment.



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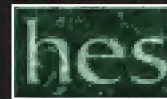
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The New 9160MC From HPC

HPC is introducing a new, modern-design strong, versatile, key duplicating machine economically priced to fit the general needs of key duplicating yet rugged and durable enough to provide accuracy, performance, and speed.

The 9160MC replaces our 9150MC allowing easier service and preventive maintenance as the motor is more accessible and the belt guard is a one-piece unit.



Ilco's Orion KD85 Code Cutter

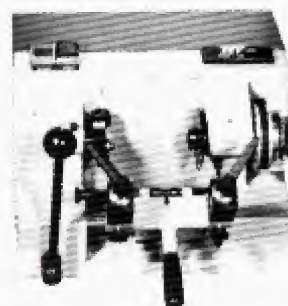
The KD85 key machine marketed by Ilco Unican is a dual purpose machine—it will duplicate an angle key and it will also originate an angle key (like Medeco) by code. This dual function is accomplished with an adjustable key guide which is governed by a specially machined depth knob. In addition, the KD85 features a synchronized tilting mechanism, which allows both the key guide and the cutter to tilt for right or left angle cuts.



Pro Sr. From Jet Hardware

The Pro Sr. key machine from Jet Hardware Manufacturing Corp. offers most of the features found on the Pro Jr. machine along with the following extras: a momentary wire brush switch; a heavy duty carriage spring providing uniform pressure against the key guide and cutter; and it comes equipped with a light.

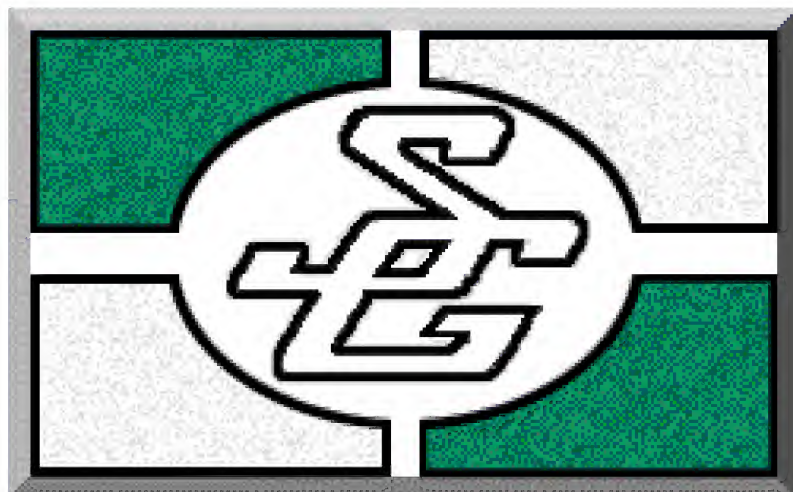
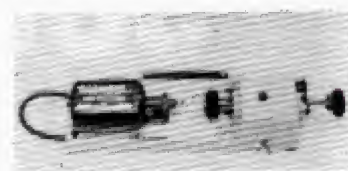
A three year or 30,000 key warranty accompanies this machine.



Scotsman's 747X Cuts Tubular Keys

The 747X key machine from Scotsman Security Products, Inc. is for locksmiths whose tubular key cutting requirements are limited to standard size tubular keys. The 747X is known for its dependability as well as its versatility in duplicating, decoding, and cutting-to-code.

In recent years, the "Segal Modification" has been included as a standard feature on the 747X. This mechanism releases the machine's inner control, allowing for keys to be cut in any radial position and to any depth.



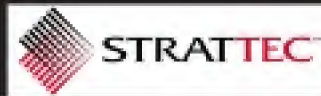
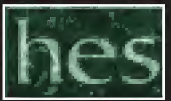
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ds safe too

MDS Safe Tools

An economical, completely portable, focusing borescope has been developed by MDS, Incorporated.

Sharp, clear undistorted magnified mirror images of inspection areas are provided with a series of optical side call probes. (OD's are 3mm-9mm, focusing from 0 to infinity.)

A variable light control on the lightweight "C" cell size power handle assures the user of maximum illumination in darkened cavities.

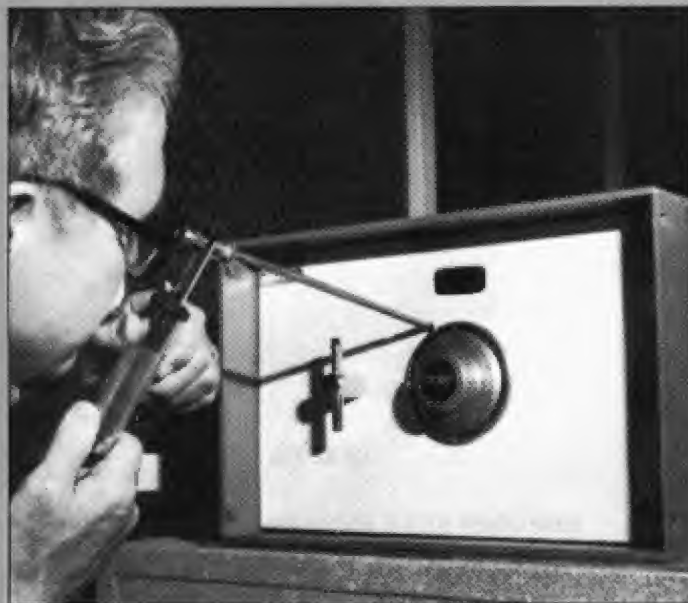
This precision perfect medical instrument is now being offered at an economical price.

Also, a low cost, 30 watt halogen fiberoptic illuminator is available to compliment the already popular focuscope™ system. According to the manufacturer, this illuminator will provide approximately 40 percent more light when used in conjunction with their new fiber-probes.

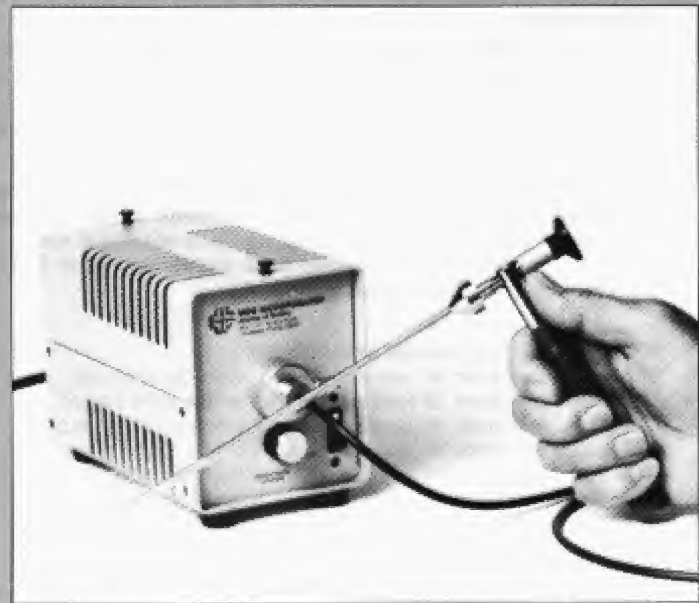
The popular universal Focuscope™ borescope line has been expanded to include over 50 accessories. More than 5,000 current locksmith/safeman users may choose to expand their modular systems.



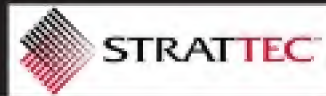
MDS deluxe kit.



The Focuscope being used to open a safe.



The 30W Halogen Illuminator.



Opening A Floor Safe

"Now I was in trouble. The quote I made was based on an incorrectly identified safe. Opening the one I was faced with was not going to be a picnic."



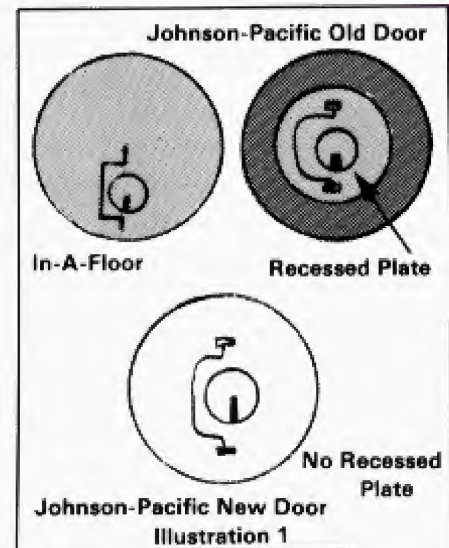
by Dale Libby

One of the harder types of safes to work on are floor safes, for many and various reasons. Some of them are as follows. One, it is physically harder for some of us older locksmiths and safe-men to get down and "grovel" on the floor under cabinets, gravy machines, or under the counter with the cash register. We are constantly being stepped

on or tripped over. Invariably, the floor safe is located in the busiest, and smallest places, with little or no light, but with plenty of dirt and junk.

What is worse than working on a floor safe is to work on the inner key locking door that for one reason or another, has stopped working.

I took this particular safe on referral from another locksmith who stated that this was an In-A-Floor safe. Most of these safes have two doors, both key locking. The easy way to recognize these doors is that the keyway is over toward one edge of the safe lid. The keyway on a Johnson-Pacific safe door, is almost in the middle of the door. (See illustration 1.) J-P used two



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configurations for these doors; the early style had the keyway in a recessed area in the center of the door, and the second style is similar to a modern door with no recessed area for the keyway.

Opening these safes is no picnic in any circumstance, but working on the inner door is especially hard, and this case was no exception. The fact that the safe was located in a cut-rate gas station, under a very low counter with shelves about one foot above the safe, just added insult to injury.

The first thing I noted as I groveled under the counter was that it was *not* an In-A-Floor safe, as I had been led to believe. Now I was in trouble. The locksmith who had referred the job to me had identified the safe as an In-A-Floor unit, and I had quoted the price for opening the safe according to improper identification.

It is very simple to open an In-A-Floor safe. You just punch the lock, hook up the Lee safe door puller apparatus, and crank the door open in just a few minutes. When the lock is punched, two relockers are set off with heavy springs behind. It is just too much work to drill for these relockers, (it is only a B-rated door), so it is much

easier to put on the puller and shear the two relockers when pulling the door open. The relockers can be replaced with the lock, and the door repaired. It's an easy 15 to 20 minute opening.

The puller used on the In-A-Floor unit by Lee is a great tool but it cannot be used on a Johnson-Pacific door, because the tip of the puller will be broken off. It was meant to be pulled, especially because of the mechanical advantage of pulling a door from the edge, as in the In-A-Floor unit, versus pulling from the center of the door. Since the puller costs about \$400, it is best to use it only on units that will succumb to its merits.

So, here we are, faced with a locked inner door of a Johnson-Pacific safe. These doors are well made, and feature a newer type of relocker that cannot be bounced open, as in some older types of J-P doors. Add to these troubles, the poor location of the door, the fact that it is an inner door, and that the location precludes the use of regular drills, because of the low shelf just above the safe door.

Working on the inner door of any safe, especially a floor safe is really troublesome due to the depth of the

inner door from the surface of the safe head. Before we can attack the safe, we must first determine exactly what went wrong to cause the lockout.

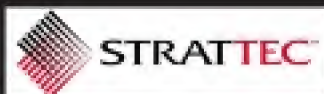
This is not as easy as it sounds. The specific problem was that when the customer tried to open the door with the correct key it would only turn about 90 degrees, when it should have turned a full 180 degrees to withdraw the bolt. This particular door used either a 4161 or 4163 Sargent & Greenleaf key changeable single key (single nose) lock. These locks in the original form were prone to malfunction after a few years of use and from being dropped when the safe head was thrown to the floor. What would happen, to put it simply, was that the lock would change the key combination by itself to a new and unknown key.

If you ever had the chance to take one of these 4163 locks apart, you would know the amount of small parts, toothed levers, springs, and spacers that these diabolical units have. Once apart, it is almost impossible to put these locks back together again (like Humpty-Dumpty). Replacement locks are now available from Jim Taylor in Lexington, KY for the 4163. These new

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locks are "fixed" and not changeable. Because of this, there are no malfunctions due to dropping or shaking the locks. If you want to change the lock, it is easiest to buy a new lock for replacement.

The recommended way to open this type of locked safe head is to drill and pick. Drill at the fence position and then pick the levers one at a time until they are all lined up at the fence. Then a turn of the key post will withdraw the bolt. A secondary way to attack this lock is to drill for the fence post, and then drill it off. This destroys the lock, but it is much faster than drilling and picking.

It must be pointed out that the door is case hardened on the top and bottom of the door, so if you drill through the body of the safe door, you will have to drill through the top and bottom hardened layers. It usually takes a hardplate drill rig and several drill bits to accomplish this but, sometimes it is easier, depending on the batch of case hardening used on that particular safe head.

Before we drill and pick or de-gate the lock, there is another possible defect that would cause the safe to seem that the key lock was not working. If

the cover plate over the back of the 4163 lock worked loose, then the relock pin at the edge of the door might have become loose and set itself off when the safe head was put in for the last time. It would resemble the lock having rekeyed itself, not letting the correct key turn all the way to the open position. There might be specific measurement to determine what the cause is, but in the confined space, I was not about to measure the movement of the keyway to see what the problem was.

The reason I could not measure the movement of the keyway, was that someone before me who had worked on the safe head to get it open had tried to punch the keyway in. Since the key trunion is tapered, it is impossible to punch this keyway in under normal circumstances. Since the keyway was already somewhat deformed, I did not know if the relocker had been set off by this non-professional attack, or if the lock had been too damaged to drill and pick.

Since I would have to replace the lock anyway, and I only wanted to drill one hole in the safe head to release the relocking pin on the opening bolt, I decided to punch the lock and the very hard nose guard over the keyway. I did not want to try to drill and pick, because if the lock was damaged that would be a waste of time. It is not that hard to release the relocker which is near the edge of the door, $\frac{1}{2}$ " down from the centerline of the safe door. More on that later.

I myself tried to punch the nose guard of the 4163, but as I said, it was impossible. I then managed to get my Lee hardplate drill rig set up and drill the guard opposite the cutout for the keyway. (See illustration 2.) After drill-

ling through to the case of the lock, I inserted a large screwdriver into the keyway, and smashed it with a hammer. Because of the drilled portion of the keyway, the nose deformed as seen in illustration two. I then placed my favorite punch on the nose and hit it once. The lock and my punch disappeared into the locked safe.

Nothing bothers me more than losing one of my tools, much less than my favorite punch to the insides of a safe. Of course, this means war.

I measured over to the edge of the door about $\frac{1}{2}$ " down from the centerline, and drilled for the relocker. Once I punched the relock pin into the safe (not easy) I withdrew the locking bolt through the same hole. The safe head opened. I did not have to repair the door, for the gas station had a replacement head. I recovered my chisel and presented my bill.

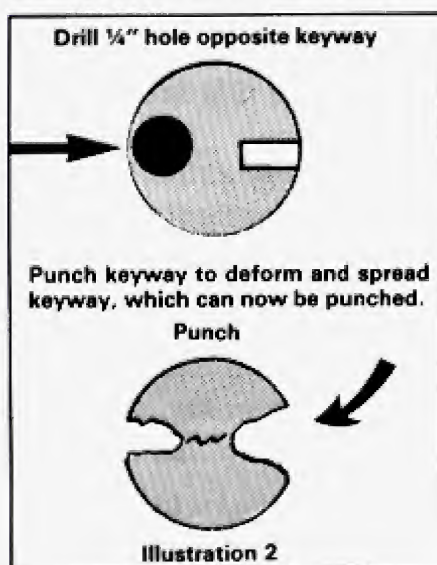
With all safe attacks and key locking attacks, there will be mitigating circumstances. Anyone who has tried to cut the armored hardened nose of a J-P key safe will know what I mean. It is much simpler and faster, if you have to, to drill, punch and spread the nose. You will have to drill two holes in the door anyway if the relocker has been set off. If only the key lock has been reset, measure and drill for the gate, and either pick the lock levers to the open position, or drill off the fence and open the lock.

Do not reuse the same lock that caused problems in the first place, or you will be called back for a similar problem. Replace the lock with a new non-changeable unit which are now available. ■

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Servicing Pundra Locks

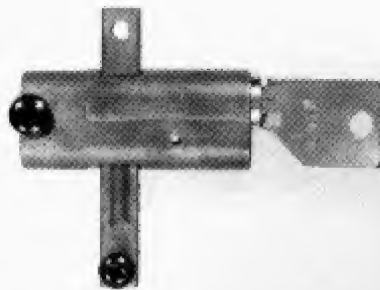
"Pundra locks are well engineered and nicely finished products, used primarily on office furniture, and generally carry no identifying markings on them."

by Robert Sieveking

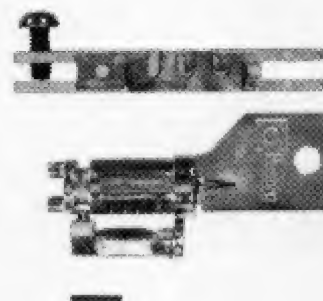
When I first heard the name Pundra, I had no idea where to go for information on the locks, keys or code series. I substituted a blank, and made keys thinking that I would rarely see this particular manufacturer. Since that time, I've seen the name and the locks more and more, and been asked to not only make keys, but find replacement locks and make keying changes for more than one customer. The information in this article will, I'm sure, be of use to others that may be called upon to service these locks. As I began this article, I punched up the word finder to see if the word Pundra had a particular meaning. Much to my surprise, the computer came back with, "In India, one versed in Sanskrit lore and science, wise man, expert, leader, researcher, master, teacher, etc. (pundit)" My first reaction, was "What a name for a company."

Pundra locks are well engineered and nicely finished products, used primarily on office furniture, and more often than not, do not carry the name of the manufacturer or state that they were manufactured in Canada. The original keys may or may not show the manufacturer's name. These locks, with some specific details and disassembly tips are the subject of this article.

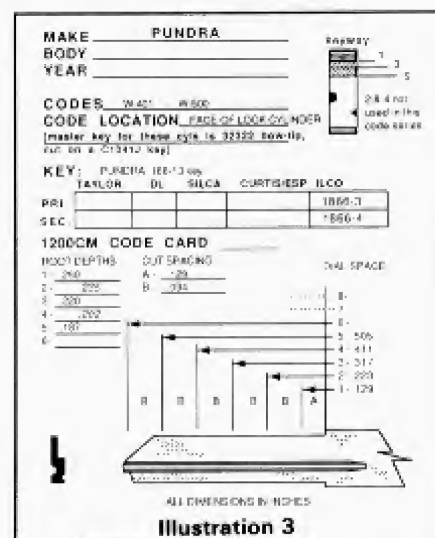
Photograph one shows a Pundra lock, of the configuration that you will find in the Teknion pedestal units. The lock is mounted above the top drawer of the unit, and is mounted horizontally. You will see that there are two screws in the body of the lock. The screw at the rear of the lock body secures the lock to the desk unit. The screw on the traveling bar, or bolt, secures the locking linkage of the drawer unit to the lock bolt. Clockwise rotation of the key 360°, will cause the bolt to travel 1/2" to the right. Unlike drawer units that lock the drawers using a "gravity drop" bolting arrangement, the Teknion units use a positive motion bolt bar which is held in the



1. Teknion pedestal type Pundra lock.



2. Pundra lock components.



locked position by the action of the lock. This lock must be picked around 360° to unlock and open the desk. That means that the lock must be picked twice, once to turn 180°, then picked again to complete the 360° rotation.

After unlocking the unit, the lock

can be removed from the pedestal by removing the two attachment screws. This lock is a real snap to work on. Again, good engineering allows the locksmith to disassemble the lock without damage. Photograph two shows the inside components of the lock. Use a 1/16" pin punch to drive the retaining pin, shown in photograph one through the lock case. Slide the cylinder retainer block and lock plug out of the shell, being careful not to lose the wafers. Once out of the shell, a key can be made by hand filing or with the use of a code machine.

Illustration three gives the depth and space information for this lock, and most all of the single sided locks manufactured by Pundra. Take a moment to examine the fact sheet. The codes for these locks run from W-401 to W-500, and are stamped on the face of the lock plug.

The factory keyway is 166-13, which is an Ilco 1866-3. There is presently no 1200-CM code card. Cut spacing and depths are shown, with exception that only depths 1, 3, and 5 are used with this code series. Depths for cuts 2 and 4 are shown for information only.

The key profile for the primary blank is shown, and indicates that the left bitting on all master keyed, and the master key is given as 32322 (53533), bow to tip. The Pundra master key for this series would be cut on an Ilco 1866-4, but a C1041J (master blank for a Chicago series) can also be used.

For those that have mastered the art of lock reading, the representation of the keyway in the upper right hand corner of the illustration shows the relative positions of the lock wafers with respect to the keyway warding.

Though I have not given you the code series for these locks, the information on the fact sheet should carry you pretty far along with making keys for these locks. If you are a reader, you probably don't need the codes anyway.

Photograph four shows a cut key

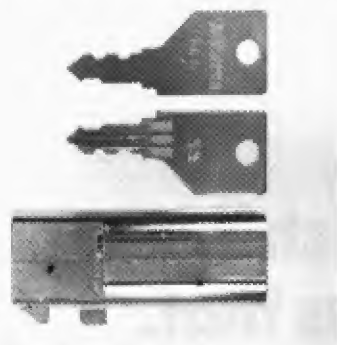


4. A cut key with the wafers.

and the wafers from the Pundra lock. The cuts on this key are 15513. Note that the wafers are layed out in order. The bitting side of the wafers is toward the key. Note the master wafers. Pinning kits and keys for these locks are available from Canada Lock, (phone: 416-248-5625). I was unable to find more than one source for these parts.

In photograph five we see a Shaw-Walker fire file lock. This is the modern replacement for the older Yale pin tumbler locks. The only source I have found for these locks is through a Shaw-Walker dealer. Because they are only used on the Shaw-Walker fire file, they are not available through most wholesale houses.

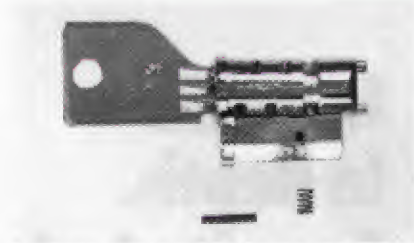
This lock *can* be disassembled in the



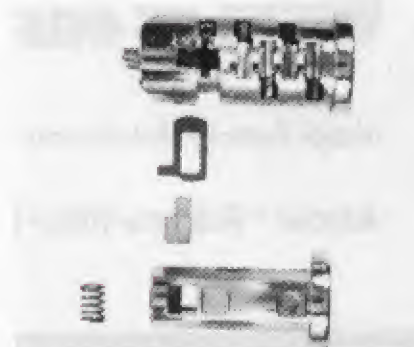
5. Shaw-Walker fire file lock.

same manner as the single sided version by driving the retaining pin through the lock body. The inner workings of the lock are shown in photograph six. Above the lock plug and retainer block is the roll pin and a small spring. Be careful not to lose the spring when disassembling the lock. Another method of removing the lock plug from these locks is to raise the last wafer to the rear of the lock, with a hook pick, and simply pull the plug out the front of the lock body. This is by far the preferred method, as it does not require the lock to be picked or even removed from the file cabinet.

This lock is well engineered for service, but I question the sacrifice in security. Photograph seven shows the lock plug retainer in detail. The last wafer in the lock, has only one function, and that is to lift the plug retaining lug out of the groove in the plug,



6. Inner workings, including the roll pin and a small spring.

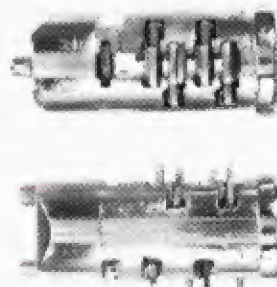


7. Shaw-Walker lock plug retainer.

allowing the plug to be removed.

The plug retaining lug is held in the groove of the lock plug by the action of the coil spring shown at the right. Notice that there are eight combining wafers in the plug. They are arranged in pairs and each pair shares a wafer pocket in the plug. The wafers have individual wafer springs, unlike the Illinois type paired wafers.

You probably noticed in photograph five that the key is double-sided, but not convenience (the key is handed, or cannot be reversed). Another point that is not immediately obvious about this lock, is the arrangement of the wafers. Notice the directions of the wafers from the front to the rear of the lock in photograph eight. The first wafer is up, the second and third down, the fourth and fifth up, six and seven are down and eight is up. If you are reading this lock, the direction and positions of the wafers becomes important. I believe this arrangement was adopted to allow for a greater adjacent cut difference (i.e., a one cut next to a five cut). Also shown is the retainer wafer at the rear of the plug.



8. Wafer arrangement is an important consideration in reading the lock.



9. The wafers for the double-sided lock in Pundra line.

The wafers for this double-sided variety of the Pundra line are shown in photograph nine. Note that they too are master wafers. The Shaw Walker fire files, using the S-## series are master keyed. There are three master keys, that will open all the locks in this series. They are designated "A, B and C." I do not have the specifics of these masters, as the master blank, which would allow the key to be made, is not yet available, or at least I haven't found it.

Illustration 10 gives some of the facts that I have gathered, on this lock. I hope they are helpful. If you have any

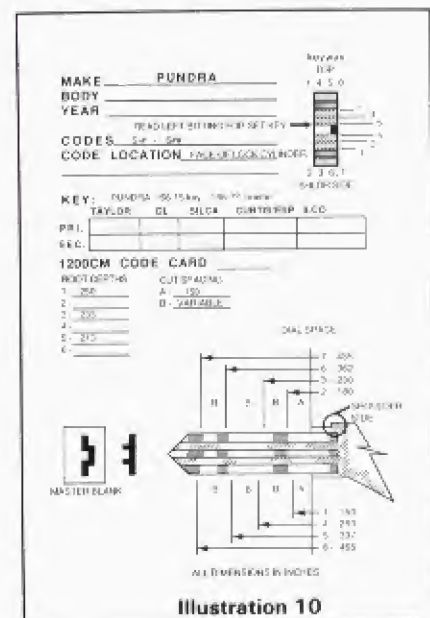


Illustration 10

questions, contact Pundra Industries Ltd., 20 Meteor Dr., Rexdale, Ontario, M9W1A4. Or phone (416) 674-1844. Good Luck. ■

Shop Talk

Helpful Questions and Answers

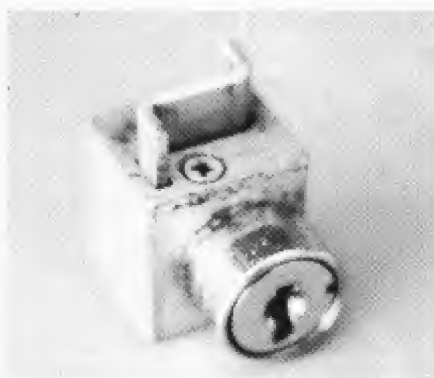
Written by *all* of the following authors: Robert Sieveking, Don O'Shall, Steve Spiwak, Dave McOmie, Jack Roberts, Shirl Schamp, and Dale Libby.

Send your locksmith questions, along with a self-addressed stamped envelope to: Shop Talk, The National Locksmith, 698 Bonded Pkwy., Streamwood, IL 60107.

Q: Your help would be appreciated in identifying the lock in photograph one. It is a sliding glass door lock, normally mounted in the bottom mullion of a display case. No manufacturer's name was found on the lock. Any help in locating the manufacturer will be

appreciated.

*Delphina Borley
New Mexico*



1. Sliding glass door lock submitted for identification.

A: I did considerable searching to find a manufacturer for the lock in your photograph. I found that the lock was not manufactured by Chicago, Illinois, Fort, Hudson or Bauer lock companies. The lock in the picture seems to have a Chicago plug, but this could be an oriental, or Canadian for that matter, imitation.

If I had to locate this lock, I would try to find the manufacturer of the showcase that uses the lock. Some of the showcase companies use specialty locks which are manufactured to their specifications, purchasing them as an OEM (Original Equipment Manufacturer) or a contract purchaser. This means that the manufacturer of the lock can only sell the lock or completed



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unit to one contract buyer. Most of the showcase companies that I have had occasion to contact are very friendly and will give you almost any service that you request.

Our shop manufactured a specialty showcase lock for the Storecraft Manufacturing Company for many years. They were the sole user of the lock, and it was manufactured to their specifications. The lock was manufactured in a small shop because the major

manufacturers are not interested in small orders. We manufactured about four thousand locks in a five year period. Those numbers don't make sense for a large company, but for a small shop it was a nice job.

Sleuthing for parts and manufacturers can be tricky. You need all the information you can get to be able to track down a source for what you need. What keyway does the lock use? Are there any other cabinets that have an

original key that might bear the name of the manufacturer? Are there any code numbers on the lock? Who is the manufacturer of the showcase? Use your library business section to find the manufacturers address if you have a name. The Lewis Register is a good source for the addresses, phone numbers and names of the company officers of almost all the companies that do business in the United States. Dunn & Bradstreet has a listing of businesses at your library that may help. Use the telephone, if you have a name and city, directory assistance will give you the phone number. Dial 1-800-555-1212 for "800" directory assistance. Without a city, if you have the name, and the company has a WATTS line, you can get a phone number. I'd be looking for the name of the company that made the cabinet. Don't give up. This is "your" quest. Good luck! 06

Q: I just spent 2 1/2 hours in the sweltering heat removing a 1977 Ford Mercury ignition switch and would kindly like to know the proper procedure for next time.

Drills, hammers, chisels, pliers, etc. couldn't be the right tools for the job.

I finally got it out with no damage to the column. Believe it or not!

*Rick Hargraves
Arkansas*

A: There are a couple of different styles of Ford product ignitions, held into the column by a retaining pin. The pin is located on the cylinder 1.380/35mm to the rear, dead center between the top and bottom of keyway facing you (while seated behind the wheel) and with the pins coming in from the bottom (that to the rear of the rear of the ears of the lock). The lock must be in the on position in order to depress the pin and rotate the cam on the rear of the lock to a position that will allow removal.

General rules to follow are: The pin must be exposed, generally requiring removal of the steering wheel. In some of the older models the pin is exposed without wheel removal and you will see it near the base of the gear shift rod. These situations where removal is not necessary are easily identified by the protrusion of the lock on the side of the column. It is as if the column comes out to meet the lock rather than the lock



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being mounted into the column.

You will have to pick, use a key, or drill the shear line and turn on to remove. Often the case is a broken buzzer switch in the keyway. If it can't be raked out the front and you find you must remove the cylinder to extract the object, copy the customer's key first and cut/grind half the key away. Insert the remaining half into the keyway riding over the obstruction. This works because both sides of the key are not necessary to operate the lock, the lock is a single sided operation. The key is only cut on both sides for convenience.

As far as drilling is concerned, you should have no particular problem. There are no hardened pins or blockage. Remember the pins are on the bottom so the shear line must also be on the bottom. Last but not least, if you have problems with the location of anything on the lock, take out another lock of the same kind, locate troubled area and transfer measurements to the one you are working on. 02



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Q: I have 450 Bommer letterboxes to service. They are the inside type. The locks are made by E.S.P. I have written E.S.P. and Bommer about codes. As these units are rented there are a lot of keys lost. Bommer will not issue codes but will sell me locks at \$6.95 each and cut keys at \$1.25. The prices are way out of line to begin with. These locks carry an H code which does not work out to Hudson's H code. They use the E.S.9 key blank.

I have contacted all the other locksmiths in this area and still haven't been able to figure out this mess. Any help on getting these codes would be appreciated. Keep up the good work, your magazine and columns are super.

*Harold Moger
Florida*

A: Thanks, Mr. Moger, but I do not think that the prices you quoted, \$1.25 per code cut key or \$6.95 per lock, are out of line. I have looked in several catalogs for Auth/Bommer locks, and have found some that are listed for \$3.10 each, with 2 keys and three different cams to fit all situations. The ordering number is ESPT656 (Auth) from M.D. Kramer. The ES 9 key-blank is the same as the Hudson H20 and the Ileo 1003M blank.

For specific information on the codes used, I would order a few cut keys from Bommer, and then I would decode these keys with a micrometer. The depth to the base of the cut to the bottom of the key blank are as follows:

Depth Cut	Measurement
0	.290
1	.272
2	.254
3	.236
4	.218
5	.200
6	.182

Once I had decoded about six keys, I would check the code books for keys that matched this number, irrespective of the H in front. In my Hudson Code Book, I have about 25 different "H" codes listed. Including an H by itself, or in combination with other letters, like HC, HL, HV, etc. One of these codes will translate to your specific codes.

Remember, the customer pays the freight, not the locksmith. If you are trying to undercut all your competition by bidding a very low price, then you are doing yourself and other locksmiths a disservice. How much will you charge the customer for a key cut by

code? My charges are \$6 for the first key, and \$1.25 for each additional key. If you ordered the keys by code, you could make a lot of money by doing nothing other than by charging a fair and decent price just by moderately marking up the most of the keys to you. You could order only one key and duplicate it, and tell the customer that he must order keys in pairs, and you would still be ahead by charging the same (over \$1.25) for each key.

Another method would be to either disassemble each lock and make a key for it individually, or by impressing

the key. The Auth/Bommer boxes can be impressed in about five minutes each. Without more specific information, or by having a lock to work on, I cannot identify the code more specifically, but it is probably published using a slightly different prefix than the ones that you have already looked up. 07

Q: I was wondering if The National Locksmith or some of your readers can help me identify this key cutter that I picked up years ago. (See photograph 2.)



2. Unidentified key cutter.

There is no name or markings of any kind on this machine. It weighs 50 lbs., the base is solid (9" x 11" x 1") and it measures 12" from base to top of cutter. 8½ arms extend to the top of the vice, and it has a V-shaped cutter measuring 6" in diameter. Brass spring loaded oilers are found on top of the shaft.

When I got it, I cleaned it up some but left the yellow looking stuff on it, which is residue from oil used when cutting. The bushings are good and tight, and I am sure it would cut a good key even though it looks like it was built to cut 2 x 4's.

A year or two ago you printed a letter from a guy in Virginia asking for information on a hand cranked code cutter built by Acme Co., Denver, Colorado. I wrote to the guy and told him, I also have one. I also have code books for this cutter back to Pierce Arrow, Hupmobile, Dusenbergs, Whippet, and Peerless. I never heard whether I would like to know what information he got, such as when it was built, and how many any be around today. I would like to learn more about both of these cutters. Thanks for any help.

*Wiley Phillips
Pennsylvania*

A: Well, Wiley, we ran this one around the horn, showed the photo at a recent ALOA Chapter meeting, made several phone calls around the country, and had Robin Shepherd at ALOA headquarters check all of the machines in the ALOA Lock Museum for something similar to this one. Everyone had a different thought as to the vintage and manufacturer of this unit, but nothing absolutely solid. One fellow we talked with has a similar machine but with an 8 inch cutter. He had tried, a few years ago, to get some information on his machine but ran into a total blank. Our best guess, based on a lot of



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asking, is that your unit is perhaps one of the early Briggs & Stratton models. Hopefully one of our Shop Talkers can come up with a better answer for you and thanks for letting us have a shot at this one. 03

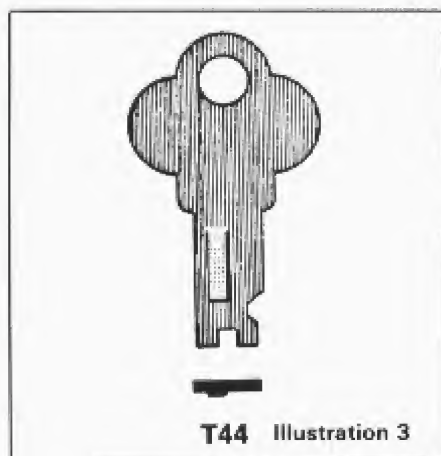
Q: First, I want to tell you that I look forward to getting The National Locksmith every month. It has helped me in many ways.

Recently, a friend of mine brought me an old foot locker. It's locked, and he wanted two keys for it. The lock is made by the Long Lock Co. and T-46 is stamped above the lock. I have a luggage key assortment, but no key for this lock. I've asked locksmiths in a radius of 50 miles and they don't have one.

I can't pick it open because it has a bar across the keyway. It takes a split key on the end.

Dale Morrell

A: The Long Lock Company is a very old manufacturer of luggage fittings and case locks. Long Manufacturing Co., Inc., P.O. Box 150, Petersburg, VA 23803 was established in 1918, and still manufactures a complete line of luggage and case fittings. The T-46 key you need is the same as an Ilco T-44. (See illustration 3.) You can call Long Lock at (804) 732-8444. Keys can be ordered by the hundreds or only two each. The gentleman that I spoke to on the phone was very helpful and my order arrived two days later.



Anyone that does luggage repairs would be well advised to contact the company for a catalogue and price sheet. Though their prices are all on a per hundred basis, I'm sure that they can either sell to you in smaller quantity or point you in the direction of a wholesaler that stocks their line, for

sales of smaller volume. If your need is immediate, you can file a working key from any .050" thick flat steel blank, using the illustration as a pattern, as the illustration is actual size. The embossed rib is used as a key stop only, and will not affect the operation of the key. The current address is: Long Manufacturing Co., Inc., 1135 Commerce St., Petersburg, VA 23803. 06

Q: Please help with a safe opening. I have a Herring Hall Marvin safe in my

shop that is simple to describe. It's the exact twin sister of Dave McOmie's dealership H. H. M. in the January 1988 issue of The National Locksmith magazine. Dave's inner chest information will be great if only I can open the safe door.

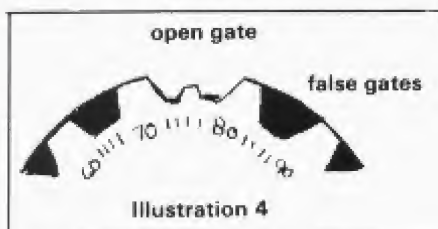
My safe door has been drilled straight in behind the dial ring at 97 x 1" (not coded). The lock is mounted on H.P. approximately 2 1/4" from the door front. This 3/8" hole entered the lock right on tumbler edge. The problem is the lock appears to have a front driver. My National Locksmith Safe Opening book



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and H. P. C. manual show reardriver on yale OB and HE locks. I have secured a reading on the three tumblers behind this driver, however, working the combination to B.C. produces nothing. Illustration four shows how the driver appears through the hole;



Is it possible that this is not a Yale OB or HE? I should add that the safe was slammed to the concrete floor on it's back at one time. Could this cause a relocker problem?

Any advice on how to proceed would be appreciated. Thank for your attention and please continue your super efforts and priceless articles in The National Locksmith magazine. A special thanks to Dave McOmie, a man who's as fun to read as he is informative.

Ralph Palmer
Ohio

A: Ralph, looking up a safe in a manual and having it be exactly what is in the manual is not always the best thing to do. Sometimes the safe in question has been altered in a non-factory way, or the manual only describes one type of lock or system used. If you have a drive wheel in front, and have to work backwards to determine the combination, a lot of patience is needed to determine what the combination is.

The drive wheel must be moved around 2 numbers at a time until the third wheel number is known, and then these two numbers, the drive wheel and the third wheel, must be dialed and the second wheel moved around 2 numbers at a time, until that wheel is known. If you have done this properly, you have already invested at least an hour, possibly more, in this thankless endeavor. Once you have gotten the combination and can dial it several times to the opening index and all the wheels do line up, then you are ready to transfer the readings around the dial. In theory, you really only have 100 possible places or combinations to try before the safe opens.

I know that this unit is not an OB or HE type, if you have a front reading

driver. My guess is that the correct drop in position is between 5 and 7 o'clock on the dial, and not exactly at 6 o'clock. If you know how to transfer the wheels, I will not go into a discussion of that practice here. There are several methods, and they all work.

The easiest, however, is to feel the false gates when you put pressure on the opening handle, and count them. On of them is the real gate. On some HHM safes that I have opened, there were only 16 to 18 false gates. One of these gates is the real gate, so again, in practice, you have eliminated 80 or so of the possible combinations you would have to dial to. The real gate is larger than the false gates, so if you have any manipulation experience, find the widest gate, (maybe only a 1/2 number each way) and dial the combination to that gate.

False gated HHM locks usually had an opening index at 9 o'clock. If you can feel the gates when you are putting pressure on the opening handle, then it is a good bet that the correct index is at 9 o'clock or 75 on the dial.

These safes did usually have a gravity relocking device which was activated when the dial was punched, but I



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do not necessarily think that it would have been activated when the safe was dropped on its back.

Try transferring the combination to other areas, and oscillate the dial and shake the handle when transferring a combination to a new location. Sometimes this will help greatly if the combination is only one number off or so.

07

Q: We have over 800 "Mobile Homes" in our park (not trailer) and two central mail areas. In the latest section the boxes are Cutler Federal with Hudson locks in a series I cannot find anywhere. I have opened only a couple and replaced the locks but would like to have the codes if you can tell me where to get them. They are a series that includes the 7000 numbers.

I would very much appreciate information on when to secure those codes.

*Raymond Champagne
Florida*

A: Ray, I checked with Hudson Lock

customer service department and they tell me that this series of code numbers is unpublished. They offered no assistance other than that cut keys can be purchased from Cutler Federal. The address is 5204 US 98 South, Highland City, Florida 33846. The phone number is (813) 644-3573. If your codes are "H" series you will find them in one of the newer code books under Hudson "H" 7000-7250. Sure do hope that this information will be helpful to you and thanks for writing to *Shop Talk*. 03

Q: I would like to know how you can master key by borrowing one or more numbers from the master. I was always told to never include the master cuts in the change key system.

However, I learned to masterkey in 1977 and figure that things may have changed by now. I would appreciate any help you can give me.

By the way, your safe manipulation course works!

Charlie

A: Yes, masterkeying knowledge has continued to expand over the years.

The method you describe, where none of the change keys has any cut in common with the cut from the masterkey in the same position is called "simple progression" or "across-the-key progression," and was the first professional technique learned by most masterkeying locksmiths.

The next improvement came with the concept of "building down" to accept lower level master keys, to where these lower level master keys would have certain cuts in common with the highest master key in the system, and certain cuts in common with the change keys in a particular group, be it a block, column, page, etc. This method was popularized by the New York (National) School of Locksmithing, and is the standard method used by most masterkeying locksmiths today.

It isn't a very large jump to the next method, which is touched on in that same course...the "Partial Progression Method." If we calculate our pinning requirements to the highest master key possible in the system, our change keys and all the master keys of various levels above it will work in the cylinder. But this is a total waste if we only need a



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Shop Talk

Continued from page 69

single lower level of master key to adequately handle the job's requirements.

But if we calculate the pinning math to the highest level of master key *actually required* by the customer's system, we increase the physical security of the lock cylinder, as well as freeing up large portions of the masterkey system that we would otherwise lose the use of.

For example, a theoretical (highest possible) master key of 145630 and a change key of 321452 could be pinned as follows:

TMK	1	4	5	6	3	0
CKI	3	2	1	4	5	2

BP	1	2	1	4	3	0
MP	2	2	4	2	2	2

That would also allow a page master from the system with cuts of 321630 to operate it. That page master could also control somewhere up to 63 additional combinations. If this were all the system needed, including those added for future expansion, we could give the customer the 321630 key instead of the 145630 key. But the 145630 key and several other levels of master key would still be capable of operating it.

But if we instead pin it to the 321630 master key as the highest master key actually required by the system, our pinning would be:

MK	3	2	1	6	3	0
CK	3	2	1	4	5	2

BP	3	2	1	4	3	0
MP	—	—	—	2	2	2

Now none of the higher master keys is capable of operating it, which means that the cylinder is more secure than it would have been the other way. Yet, you will notice that the master key we are giving the customer, and which we are using to calculate the pinning *does indeed* have some cuts in common with the change keys.

The rule here changes to: Never use any cut from the master key in the same position on any change key, *unless it is used in the same position on all the change keys!*

Partial progression was the next professional technique, but it was not the last. Developing independently was a set of techniques that are commonly known as either "hold and vary progression" or "rotating constant



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progression".

In the "across-the-key progression" and "partial progression" methods, the change keys created by the system are identical for any given master key. This is not true of the "hold and vary" method. Instead, it will have some change keys that mimic those from one portion of a partial progression chart, and others that seem, at first, to be unrelated to it.

In this method, rather than having *certain positions* where the highest master key actually used and the change keys have the same depth of cuts, it will have a *certain number of positions* where they are the same.

The easiest way of envisioning this is to look at a couple of partial progression systems.

Using a master of 032505, we could accept the change keys 032501, 032503, 032507, and the probably uncuttable 032509 as being controlled (or operated) by it. If we pinned it to this as the highest master actually needed (this sure is a small system huh?) we would get pinning of:

MK 032505	MK 032505	MK 032505
CK 032501	CK 032503	CK 032507
<hr/>		
BP 032501	BP 032503	BP 032505
MP ----4	MP ----2	MP ----2

Looking at another example, a different system might not have progressed from right to left, but may instead have progressed starting at the left, as in the following example:

MK 032505	MK 032505	MK 032505
CK 232505	CK 432505	CK 632505
<hr/>		
BP 032505	BP 032505	BP 032505
MP 2-----	MP 4-----	MP 6-----

Of course, those two sets of pinning math would not exist in the *same* partial progression system. But take a look at the master key for the two sets. It is the same! And will either of the change keys from the first group operate any of the cylinders from the second group, or vice versa? No!

Do you know why? Because they are from the same hold and vary masterkey system! In this case we would say that the system is holding 5 and varying 1. There would be six sets of change key groups in such a system, each capable of up to four change keys. And the *only* masterkey capable of controlling (or operating) any of the up to 24 combinations in the master we used to build the

system, in this case the 032505.

Hold and vary masterkeying is a bit tricky, however, in that the master keys of various levels under a given master will contain an oddly overlapping group of combinations. For this reason, it should be used by the amateur only for simple systems or expansion of partial progression systems which have outgrown their capabilities.

For the true masterkeying professional, however, the capabilities for better handling of complex masterkeying jobs by the careful use of the hold and vary method are almost staggering! 05

Letters

Continued from page 7

page 91. Read this! Tell me there is not something wrong with this. In our own locksmith magazine, it says, "This set of tools is essential for tow truck operators, body shops and garages!" No sign of being for the locksmith there is there? Are these people subscribers to *The National Locksmith*?

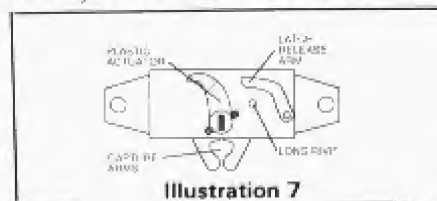
I say we had better start policing our trade from the *inside* first then maybe we can be better equipped to deal with the public. Our problems in this trade come from within *not* without. Wake up and smell the coffee. Lets start with manufactures, suppliers, trade publications, and locksmiths. Otherwise stop complaining. The public *will* buy if it is made available to them...legal or not! I invite anyone to take up an assumed name, get cards made, and go to a supplier, see what you can buy, and see what you can join. If you do not believe this, try it, or stop complaining and go back to sleep.

Larry Mack
Colorado

Technitips

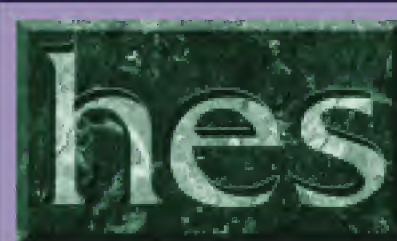
Continued from page 16

insure that the motor can develop its full power without a significant drop in the supply line voltage. (See *illustration 7*). Use #14 or #12 stranded wire,



solder and tape all wire connections and always fuse the line at the source (usually at the battery). An in-line or toggle switch, mounted to the bracket can be used to control the motor.

Leo Koulogianes
Tennessee



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